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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,137	05/31/2006	**Ralf Knischka**	CO/2-22993/A/PCT	1985

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EXAMINER	
NGUYEN, VU ANH	
ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
05/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/581,137	KNISCHKA ET AL.	
	Examiner	Art Unit	
	Vu Nguyen	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-17 and 19* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/04/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the preliminary amendment, filed 05/31/2006. Claims 1-17 and 19 are pending in this application.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claims 1-17 and 19 are objected to because of the following informalities: In claims 1-4 and 19, the recitation of the resins is confusing. For example, the phrase "a thermally cross linking film forming binder resin or binder resins" is ambiguous as it is unclear whether or not the “binder resin**s**” are intended to be thermally cross linking film forming since such property seems to be attributed to a single binder. The phrase therefore can be understood as a thermally cross linking film forming binder resin or any (unspecified) binder resins. In claims 2-16, a comma should be inserted after the phrase “according to claim x”. Also, these claims should start with "The", not "A". In claim 6, the Markush group for the moiety X is in improper format: the last species should be

preceded with an "and". In claim 17, line 2, an "of" should be inserted after "steps".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. This claim recites a molecular weight of a polymer without specifying the type of molecular weight (M_n, M_w, M_z, etc).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schimmel et al. (US 6,197,883) in view of Sherwin et al. (US 4,711,944).

10. Regarding the limitations set forth in this claim, Schimmel et al. (Schimmel, hereafter) teaches a thermosetting powder coating composition comprising a thermally curable epoxide-functional film-forming resin (Abstract; col. 16, lines 13-37; col. 28, lines 36-46), an epoxide-reactive crosslinking agent, and a flow-controlling agent (Abstract), wherein the flow control agent is a block polymer prepared by ATRP of a first monomer and a second monomer. The polymer is in the form being claimed (col. 13, lines 53-65). The disclosed initiators (col. 9, lines 43-52) read on the claimed *In* and *E* moieties. The polymer can be linear, branched, hyperbranched, star or graft polymer, which read on the claimed *y* and *n* values. The first monomer and the second monomer are selected from a group of C1-C20 alkyl (meth)acrylates (col. 4, lines 62-65), including *tert*-butylacrylate (col. 5, line 5), and are such that the T_g of the second monomer is about 40-100°C higher than the T_g of the first monomer (col. 4, lines 38-51). The polymer comprises 15-85 wt% or the first monomer and 15-85 wt% of the second monomer (col. 4, lines 1-21). This range clearly overlaps well with the claimed percent of tert-butylacrylate. The disclosed polymer has an M_n of 5,000-30,000 (col. 4, line 28), which reads on the claimed *x* value.

11. Clearly, Schimmel teaches all the limitations set forth in this claim but fails to teach a specific polymer made of more than 30 wt% of *tert*-butylacrylate.

12. Sherwin et al. (Sherwin, hereafter) teaches humidity-resistant coating employing branched polymers of *tert*-butylacrylate (Title). It is disclosed that coating compositions containing copolymer of *tert*-butylacrylate and a polyfunctional acrylate exhibit superior humidity resistance compared to compositions containing polymers not possessing these two monomers (col. 1, lines 56-65). It is further disclosed that known weatherable coatings based on copolymers of *tert*-butyl acrylate, due to the high T_g of the polymers when high T_g comonomers are employed, are more appropriately formulated into powder coatings (col. 1, lines 35-55). The polymers comprise about 30-60 wt% of *tert*-butyl acrylate, based on the total monomers (col. 1, line 40; col. 2, line 7).

13. In light of such teachings and since Schimmel teaches a powder coating composition containing a polymeric flow control agent made of monomers that include *tert*-butyl(meth)acrylate, and the only requirement is on the glass-transition temperatures of the monomers as discussed above, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have employed *tert*-butylacrylate in the amount taught by Sherwin as the first monomer in the polymer taught by Schimmel and selected from the list of monomers taught by Schimmel a second monomer having an appropriate T_g value so that the resulting (thermally cured) coating may have improved humidity resistance.

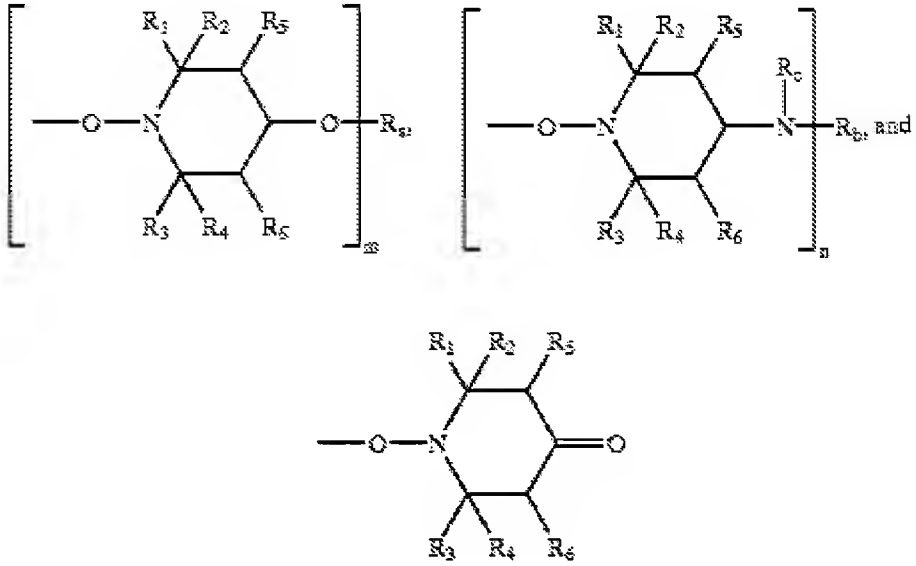
14. Claims 1-6 and 8-9, 11-13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schimmel et al. (US 6,197,883) in view of Kramer et al. (US 6,433,100).

15. Regarding the limitations set forth in these claims, Schimmel teaches a similar powder coating composition as discussed above. Corresponding to claims 8-17, the flow control agent taught by Schimmel is designed to have a low PI (col. 3, lines 30-32). The examples give flow control agents having a PI less than 2.0 (col. 24, line 49; col. 25, line 35; col. 26, lines 2 & 59). The flow control agent clearly has a T_g within the range recited in claim 9. For example (Table C), a copolymer of isopropyl methacrylate and 2-ethylhexyl methacrylate (50:50 wt%) is expected to have a T_g of about 35°C. The flow control agent is preferably a linear polymer (col. 3, line 65), which corresponds to claims 11 and 12, and has an M_n of 5,000-30,000 (col. 4, line 28). Corresponding to claim 16, the disclosed flow control agent is employed in an amount of 1.4% by weight relative to the weight of the epoxy-functional resin (Table 1). A process of improving the smoothness of a coating by applying the powder coating to a substrate and curing at 145°C is also taught (col. 28, lines 25-46 & 67).

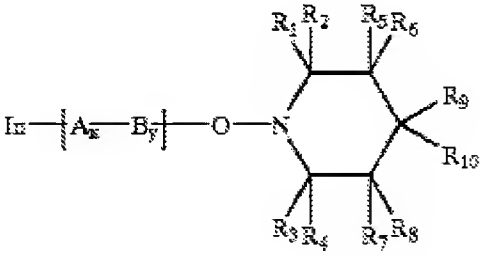
16. Clearly, Schimmel teaches all the limitations set forth in these claims but fails to teach a flow control agent prepared by nitroxyl-mediated controlled free radical polymerization.

17. Kramer et al. (Kramer, hereafter) teaches a process for preparing polymers containing N-O terminal groups (Title). The process involves a polymerization of at least one ethylenically unsaturated monomer, which is selected from a group that includes (methyl, ethyl, n-butyl, isobutyl, tert-butyl, 2-ethylhexyl, isobornyl) (meth)acrylates (col. 5, lines 20-25) by ATRP using an initiator that includes such species as p-toluene sulfonyl chloride (col. 4, lines 47-55), followed by the replacement of the terminated

halogen group on the polymer with the free radical species R'R"N-O· (col. 2, lines 62-65). Such nitroxyl radical includes such species as the followings:



The resulting polymer, for the case of linear copolymer of some A and B monomers, has the following form:



The starting alkoxyamines are commercially available and their preparations are well-known in the art (col. 16, lines 58-61). The synthesized polymers are suggested to be employed in numerous formulations, including coating compositions (col. 16, lines 48-53). **[Motivations]** The process not only has the advantages of the ATRP process (i.e., low polydispersity, well controlled MW, etc) (col. 1, lines 8-18) but also removes the

terminal halogen left from the ATRP process. The presence of such halogen is a polymer is undesirable because, upon thermal curing of, say, a coating containing such halogen-terminated polymer, the halogen is removed as hydrogen halide, resulting in a double bond at the polymer terminal. Said double bond makes the polymer susceptible to oxidation by atmospheric oxygen. The hydrogen halide may react with other functional groups present on the polymer or in the composition containing said polymer. Further, the halogen at the terminal of the polymer may be removed in the form of a radical, which may initiate undesirable chain reactions in the polymer (col. 2, lines 30-46).

18. In light of such benefits, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the flow control agent taught by Schimmel by replacing the terminal halogen left from the ATRP process with the R'R"N-O group taught by Kramer so that the resulting coating is free of the complications and drawbacks resulted from the presence of such terminal halogen.

19. Claims 10, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schimmel et al. (US 6,197,883) in view of Kramer et al. (US 6,433,100) as applied to claim 1 above, and further in view of Sherwin et al. (US 4,711,944).

20. Regarding the limitations set forth in these claims, the composition of claim 1 has been shown to be unpatentable over Schimmel in view of Kramer as discussed above. Schimmel includes embodiments where the monomers are tert-butyl (meth)acrylate as mentioned above. Also, as discussed in paragraph 10 above, Schimmel does not

preclude an embodiment where the flow control agent has a composition as recited in claims 14 and 15. The disclosed polymer is solid at room temperature (examples). However, Schimmel fails to teach a specific polymer made of more than 50 wt% of *tert*-butylacrylate.

21. From the teachings of Sherwin as stated in paragraphs 12 and 13 above, which are herein incorporated, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have employed *tert*-butylacrylate in the amount taught by Sherwin as the first monomer in the polymer taught by Schimmel and selected from the list of monomers taught by Schimmel a second monomer having an appropriate T_g value, such as *tert*-butyl methacrylate, so that the resulting (thermally cured) coating may have improved humidity resistance.

Allowable Subject Matter

22. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu Nguyen
Examiner
Art Unit 1796

/David Wu/
Supervisory Patent Examiner, Art Unit 1796